Maintenance Bureau Specification 2010-04
for
Automated Flagger Assistance Device (AFAD)
(March 2010)

This document describes the features and specifications for "Automated Flagger Assistance Devices (AFADs)". The AFAD shall meet or exceed the following: 1) "Automated Flagger Assistance Devices" Section 6E.04 – through "Red/Yellow Lens Automated Flagger Assistance Devices" Section 6E-06 found in the MUTCD 2009 edition and 2) the specification found herein. All products must be inspected by the State Signal Shop for acceptance to be placed on the Approved Products List (APL) for the State. Proper paper work and fees shall be on file prior to any inspection taking place. All products submitted for bid shall be pre-qualified and included in the Alabama Department of Transportation's "Materials, Sources, & Devices with Special Acceptance Requirements" (APL), List IV-3, "Work Zone Traffic Control Devices", sub-heading "***Automated Flagger Assistance Devices (AFADs)***".

1.0 General

The following items will be addressed in the following sections: display, control system, power source, and trailer and cabinet assemblies.

1.01 Bonded delivery and warranty of the product shall be made available

1.02 All wire, cable and other electrical components shall be properly sized/rated for the unit and its operation and shall be suitable for exposed, outdoor installations subject to adverse weather conditions. The wiring harness shall be securely fastened inside the arrow panel to reduce fatigue at the lamp terminals.

1.03 The system shall be protected against short circuit, overload, and reverse polarity by appropriate fuses and protective devices.

1.04 The AFAD shall be supplied with all software and hardware required for the operation and maintenance of this system, this is to include all manuals and guides.

1.05 The circuitry and controls shall be covered by a one year warranty from the date of invoice to the final user. All components shall be covered by their respective manufacturers.

1.06 The AFAD shall be supplied in either a trailer or cabinet option.

2.0 Display

2.01 The AFAD shall either utilize the STOP/SLOW (Section 6E.05 in 2009 edition of MUTCD) or the RED/YELLOW LENS (Section 6E.06 of 2009 edition of MUTCD) configuration.

2.02 STOP/SLOW Configuration shall utilize "Warning Beacon" only, "Type B warning lights".

2.03 RED/YELLOW LENS Configuration shall utilize LED ball indications in the head.

2.04 Both configurations shall employ visible methods of determining the status of each AFAD unit from the back-side of the unit. The legibility of this indication shall be clear for a minimum distance of 300 feet from the back of the unit in daylight hours and shall not produce false indications to opposing traffic.

2.05 There shall also be a device installed to automatically control the lamp intensity appropriate to ambient light conditions, up to 50% dimmer from full brightness, and not be affected by vehicle headlights or street lights.

2.06 The AFAD shall utilize a gate-arm assembly regardless of configuration.

3.0 Control System

3.01 The control system for the AFAD shall be housed in a weather resistant, lockable box that shall contain the solid state circuitry, ON/OFF switch, communication equipment, and related circuitry to operate the divice.

3.02 Shall utilize a remote controlling device to allow the operator to be a minimum of 25' from the unit.

3.03 Remote controlling device shall provide capability of controlling two AFADs at the same time.

3.04 Remote controlling device shall provide indications depicting current display for each AFAD controlled.

3.05 When two AFAD devices are used to control conflicting traffic flows, they shall be able to communicate with each other and ensure that both devices do not allow traffic to flow at the same time for a minimum distance of ½ mile separation.

3.06 Shall include some sort of warning device/mechanism to warn workers when a vehicle ignores the STOP condition and proceeds through the work-zone.

4.0 Power Plant

4.01 The power for the AFAD power system shall consist of a solar-assisted, battery bank.

4.02 The battery for the generator or the battery bank shall be housed in a lockable container with expanded steel sides or some other equally effective ventilation design or material to permit continuous operation in ambient temperatures up to 120° F.

4.03 Solar panel(s)/array(s) shall provide a minimum of 40 watts.

4.04 The solar assisted battery bank shall provide a minimum of 120 VDC power, utilizing heavy duty, industrial, deep cycle batteries with an onboard battery charger to be supplied with a 110 VAC connection routed to the outside of the enclosure.

4.05 The solar-assisted, battery bank shall be capable of operating for a minimum of 15 days of continuous operation with the solar cell(s) disconnected from the battery bank (i.e. run off of the battery bank for a minimum or 15 days).

5.0 Trailer Assembly (Trailer option only)

5.01 The trailer shall be all steel constructed with $^{1}/_{8}$ inch thick deck plates, arc welded to a steel tube frame.

5.02 The trailer shall be engineered to provide adequate strength and support for the AFAD.

5.03 The STOP/SLOW sign or RED/YELLOW lens device shall be raised and lowered by means of a ratchet-type, hand crank winch using ¼ inch braided steel cable or by a suitable spring, counter-balanced hand-lift.

5.04 Locking mechanisms shall be provided to allow the locking of the display conficuration in both the raised and lowered positions.

5.05 The trailer fenders shall be heavy gauge, formed steel, full width, with interior splash shields.

5.06 The trailer shall be equipped with a conventional swivel jack with folding, handle mounted to the draw-bar assembly immediately behind the towing hitch.

5.07 The trailer hitch shall be capable of connecting to either a Class II 2" ball or pintel-hook tow bar, along with two $^{5}/_{16}$ inch minimum safety chains welded or otherwise securely fastened to the tongue of the trailer.

5.08 The trailer axle shall be rated no less than 2000 pounds.

5.09 The trailer shall also be equipped with four (4) adjustable stands, one at each corner for support, constructed of 1-$^{3}/_{4}$ inches x 1-$^{3}/_{4}$ inches Unistrut (or similar post-type jack stand design of equal strength) complete with foot-pads, mounting pads, locking pins, and clips.

5.10 All trailer parts, excluding the wheels, shall be finished with a minimum of one primer coat and two coats of Federal Orange enamel or equivalent.

5.11 All nuts and bolts shall be steel, minimum grade 5, stainless steel.

5.12 A standard four wire, quick disconnect coupling shall be supplied with each unit for connection to the towing vehicles lighting system.

6.0 Cabinet Assembly (Cabinet option only)

6.01 The cabinet shall have two (2) wheels attached to the unit that are not in contact with the roadway when the device is in use.

6.02 The cabinet shall be equipped with four (4) adjustable stand legs, one at each corner, that extend a minimum of 1 foot from the cabinet for stability and leveling, constructed of 1 – ¾ inches x 1 – ¾ inches Unistrut (of similar post-type jack stand design of equal strength) complete with foot-pad, locking pins, and clips.

6.03 The cabinet, excluding the wheels, shall be finished with a minimum of one primer coat and two coats of Federal Orange enamel or equivalent.

6.04 All nuts and bolts shall be steel, minimum grade 5, stainless steel.